2. Remarks

Claim Rejections – 35 USC § 102

Claims 25, 28-33, 38, 39, 46 and 47 were rejected under 35 U.S.C. 102(b) as being anticipated by Douglas et al (US 4,023,961).

The current invention teaches specific advantages related to the use of particles with an average diameter of less than about 1 micron (see Specification page 25, second full paragraph), and the claims as currently amended recite an average diameter of less than about 1 micron.

The FOA (page 4, third full paragraph) states that Douglas et al fail to teach a method of producing powder having particles with an average diameter of less than about 1 micron. Accordingly, the applicants respectfully submit that the claims as currently amended are patentable over Douglas.

Claim Rejections – 35 USC § 103

Claims 26, 34, 36, 37, 40, 42-45 and 48-50 were rejected under 35 U.S.C. 103(a) as being unpatentable over Douglas et al in view of Ranade et al (US 5,928,405). The applicants will swear behind Rande et al. Accordingly, the applications respectfully submit that the claims as currently amended are patentable over Ranade et al.

Claims 26, 34, 36, 37, 40, 42, 48 and 50 were rejected under 35 U.S.C. 103(a) as being unpatentable over Douglas et al in view of Schmidberger et al (US 4,396,420). The applicants respectfully traverse this rejection.

Schmidberger et al teach a method for making Ag / metal oxide particles with diameters in the range of 1 – 10 microns (see column 2, lines 44-46) wherein the particles have individual metal oxide grains with dimensions of less than 1 micron (see column 2, lines 46-47). Schmidberger et al makes a clear distinction between the size of the composite particles and the size of the metal oxide precipitate grains. The present invention teaches advantages related to average diameters of less than about 1 micron for specific particles, not particles' constituent grains.

The new art disclosed by the present invention is patentably distinct from Schmidberger et al in light of Douglas and would not be obvious to one skilled in the art. Accordingly, applicants respectfully submit that the claims as amended are patentable over the cited art and should be allowed.

Claims 27, 35 and 41 were rejected under 35 U.S.C. 103(a) as being unpatentable over Douglas et al in view of Yamada et al (US 4,173,518). The applicants respectfully traverse this rejection.

Yamada et al teach the use of aluminum reduction electrodes made of or coated with particular mixed-metal oxide materials. Yamada et al teach that the oxide electrodes or oxide-coated electrodes (e.g. oxide-coated carbon electrodes) resist oxidation when immersed in molten

salts. Yamada et al teach directly depositing solid oxide coatings by flame spraying, plasma spraying and electroplating (column 7, lines 14-16), and report depositing oxide coatings using plasma spraying of semi-molten oxide granules (see, for example, column 11, lines 5-11). Yamada et al also teach two-step deposition of solid oxide coatings by first depositing (e.g. by dipping, spraying, thermal decomposition, etc.) a precursor coating comprising a metal and subsequently sintering the precursor coating to convert the precursor coating to a solid oxide coating (see column 7, lines 17-28), and report using a two-step process in which solid metal coatings were first deposited by electroplating and were then converted to oxides by oxidative sintering (see, for example, column 9, lines 11-21).

Neither of the methods taught by Yamada et al for forming solid oxide coatings involves direct formation of oxides from metal compounds, and neither of the methods taught by Yamada et al suggests the direct aerosol pyrolysis method of forming specialized fine powders taught by the present invention. Even one skilled in the art would not have arrived at the present invention by combining the solid coatings deposition methods taught by Yamada et al with the powder formation method taught by Douglas et al. For example, neither Yamada et al's first method of making gallium oxide coatings by plasma spraying using gallium oxide granules, nor Yamada et al's second method of, say, electroplating a Ga precursor coating and then oxidizing the metallic precursor coating to form an oxide coating would likely be combined with the Douglas et al method of making oxide particles directly from reactant solutions via aerosol pyrolysis to arrive at the direct powder processes taught by the present invention.

The new art disclosed by the present invention is patentably distinct from Yamada et al in light of Douglas et al and would not be obvious to one skilled in the art. Accordingly, applicants respectfully submit that the claims as amended are patentable over the cited art and should be allowed.

Claims 30-32 and 36 were rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative under 35 U.S.C. 103(a) as obvious over Asada et al (US 5,964,918). The applicants respectfully traverse this rejection.

Asada et al teach an aerosol pyrolysis method of preparing a metal powder in which the surface of the metal powder is in part coated with another material. The method of Asada et al involves mixing multiple metal-containing reactants together in a common solution, atomizing the solution into droplets, and heating the droplets to form powder in which the multiple metals automatically segregate into a particle comprising the "major metal" and a surface deposit comprising the "metal or the like", e.g. a solution comprising Ag- and Ni-containing reactants reacted to form Ag powder with Ni oxide on the surface (see column 4, lines 59-64). All of the examples given by Asada et al involve Ag or Ag-Pd as the "major metal". While the present inventors believe that it is likely that the method of Asada et al works only for select noble metals (e.g. Ag and Pd) in which select secondary metals will segregate as oxides (e.g. Cu & Ni) or metals (e.g. Rh), Asada et al teach that the method is also applicable to major metals selected from the base metals including Cu and Al (see column 2, lines 39-41). For all "major metal" choices, Asada et al teach that the "metal or the like" not melt under conditions for forming the powder and that the "metal or the like" not hardly dissolve in solid solution form in the powder (see column 2, lines 53-58).

The applicants respectfully submit that the claims as amended are limited to materials that do not meet the criteria of Asada et al, namely the metals groups defined in claim 30 as currently amended do not meet the melting and/or dissolution criteria defined by Asada et al, and hence

the present invention is not anticipated by or obvious over Asada et al.

The new art disclosed by the present invention is patentably distinct from Asada et al and would not be obvious to one skilled in the art. Accordingly, applicants respectfully submit that the claims as currently amended are patentable over the cited art and should be allowed.

Conclusion

For all of the above reasons, applicants submit that the claims are now in proper form, and that the claims all define patentably over the prior art. Therefore they submit that this application is now in condition for allowance, which action they respectfully solicit.

Conditional Request for Constructive Assistance

Applicants have amended the claims of this application so that they are proper, definite, and define novel matter that is also unobvious. If, for any reason this application is not believed to be in full condition for allowance, applicant respectfully requests the constructive assistance and suggestions of the Examiner pursuant to M.P.E.P. §706.03(d) and § 707.07(j) in order that the undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

The applicants can be reached by telephone at (805) 987-7258.

Very Respectfully,

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